

# JPSD Experiment

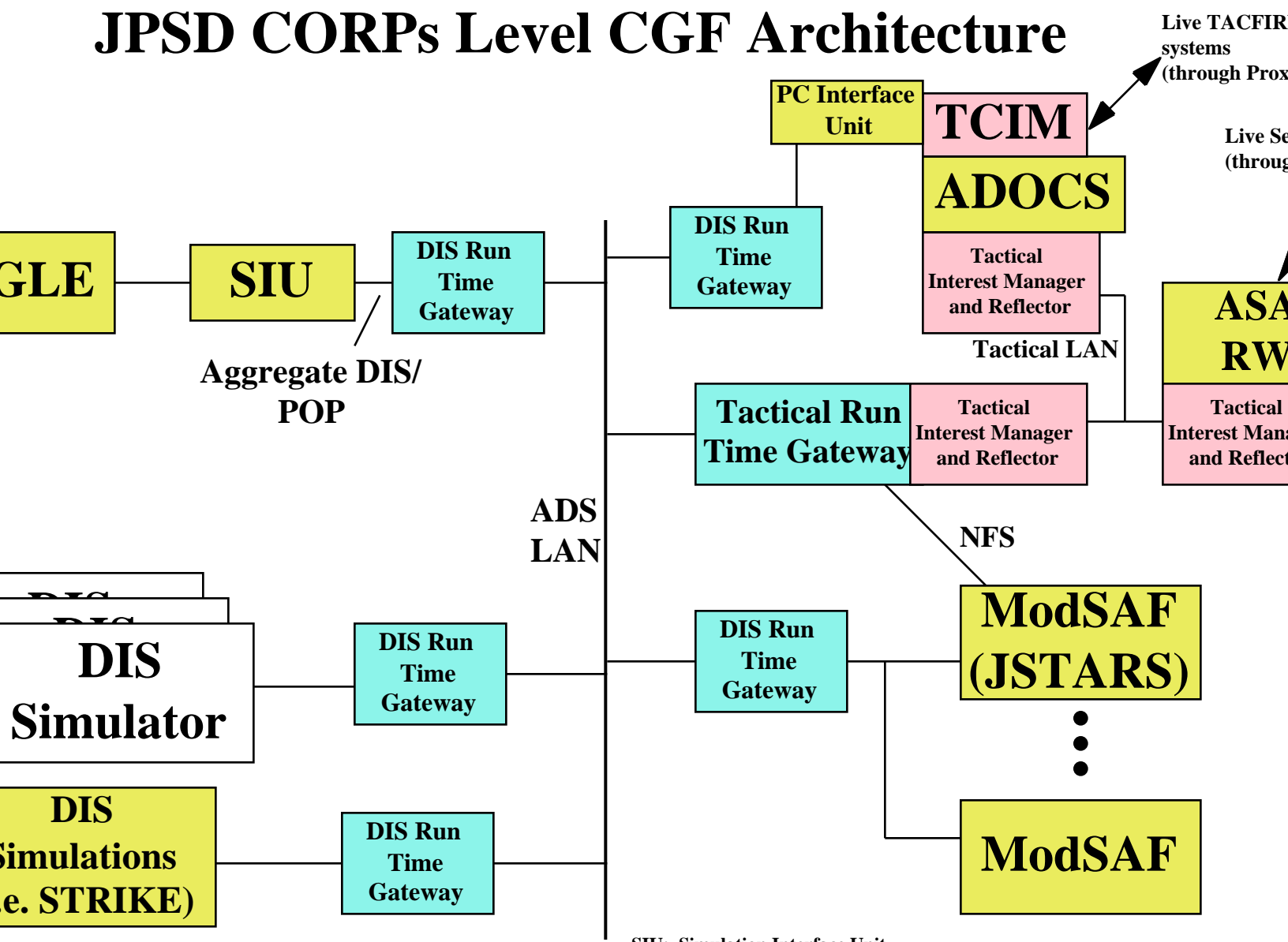
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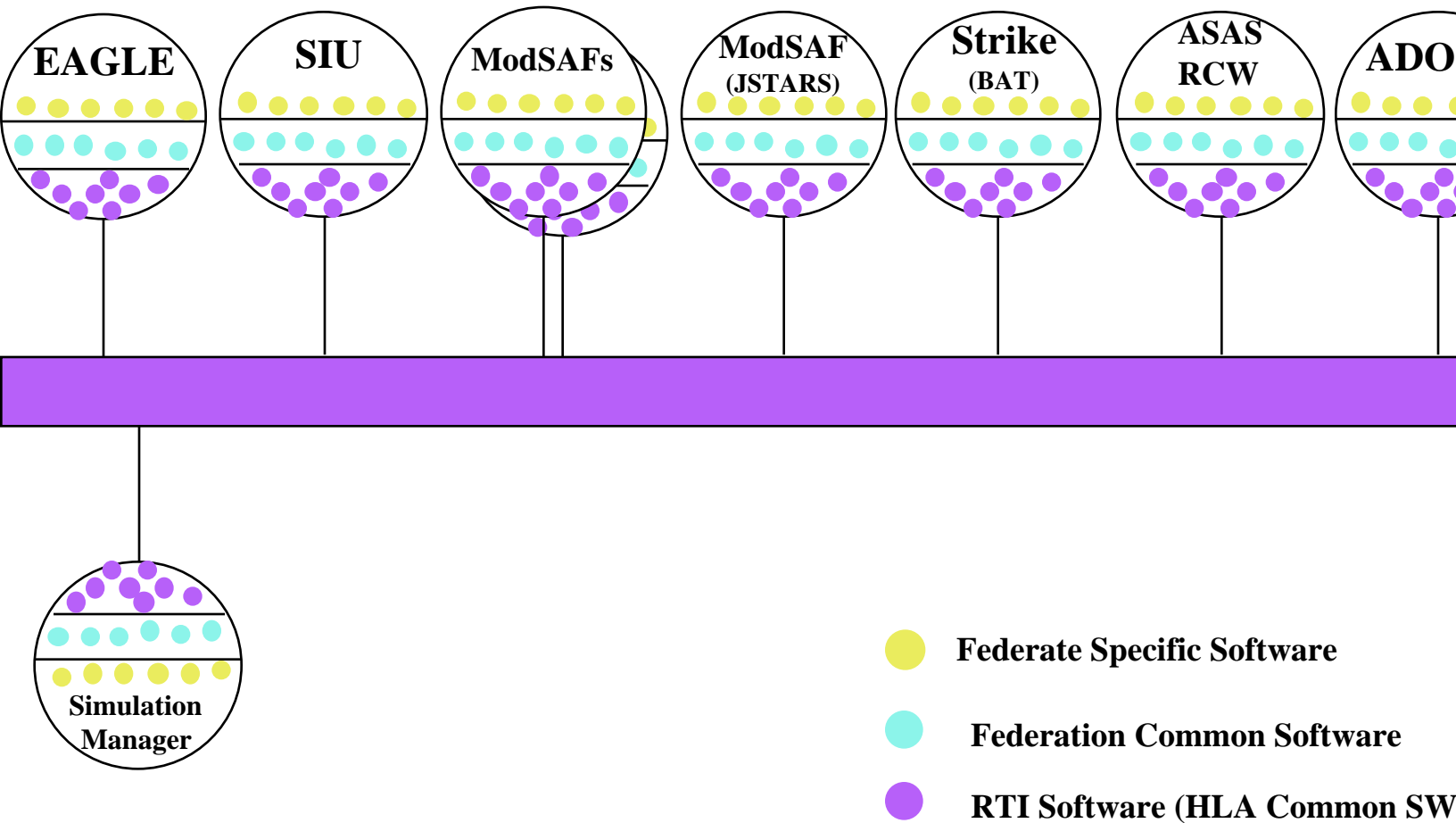
# JPSD CORPs Level CGF Architecture



SIU: Simulation Interface Unit  
ASAS RWS: All Source Analysis System Reconfigurable Workstation  
ADOCS: Automated Deep Operation Control System  
TCIM: Tactical Communication Interface Modem 1/22/96 15:06 p

Experiment Status

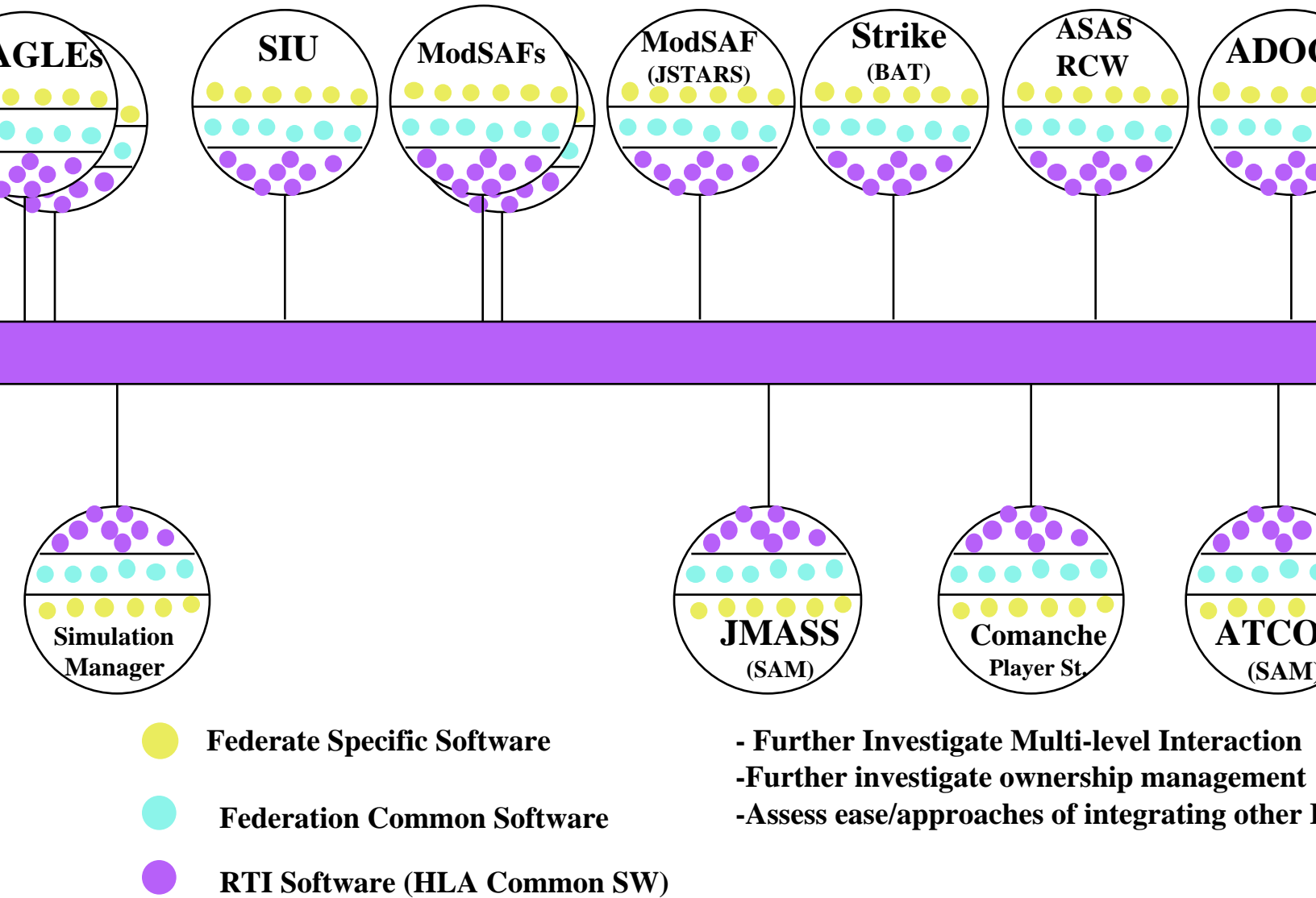
# JPSD HLA Experiment



Experiment Status

1/22/96 15:06 p

# JPSD Experiment Augmented



Experiment Status

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# What Is In the Federation Common Software ●

- **Interest Management Matrix Class**
  - **Manages state of Publication/Subscription for each Class in the Federate**
- **Federate World View (FWV) Class**
  - **Maintains mapping between HLA object ID and Federate representation of entity ID**
  - **Maintains ownership Information and latest state of entities**
- **Simulation Ambassador Class**
  - **Receives Data from RTI and accesses FWV**
  - **Provides methods for bundling information for the Federate to use**

# **What Is In the Federation Common Software (cont...)**

- Dispatcher Class**

- Provides Bundling methods for requested attributes**
- Provides methods for determining if an update is necessary**
- Provides methods for ownership transfer**

- Statistics Class**

- Provides methods for counting various HLA and Federate transactions**

- Tactical Message Library Class**

- Provides a common set of Classes and definitions defining the message set and operations on that message set**
- Includes message conversion methods**

## Experiment Schedule--So Far On or Ahead of Schedule

Task	Duration	Start	Finish
Detail Design & FOM Development	4w	12/21/95	1/17/96
Federate Common SW (FCS) Development	44d	1/18/96	3/19/96
Integrate FCS into Sims	4w	3/20/96	4/16/96
ModSAF Modifcations	6w	1/1/96	2/15/96
Eagle Modifications	8w	2/1/96	4/1/96
ADOCS, ASAS RCW Mods (C4I Interface)	4w	1/1/95	2/1/96
Strike Modification (DIS Interface)	8w	2/20	4/17
SIU Interface Dev.	8w	3/17/96	5/14/96
System Integration & Testing	5w	4/17/96	5/21/96
Experiments	8w	5/22/96	7/18/96
Open House at JPSD Site	1d	7/19/96	7/19/96
Document System & Experiment	6w	7/20/96	8/31/96

Experiment Status

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# **Lessons Learned to Date**

- Most Of Our Lessons Learned Will Be Based On Software Implementation and Experimentation Versus Process**
  - We have a well defined Federation**
  - Well defined scenario with know transactions and attributes**
  - Team has worked together for two years**
  - In place development and test environment**



# Lessons Learned

## Federate Changes

- With our Common Federate Software (CFS) Library we have Overall fewer changes in each federate
- Various changes for time management to assure proper state updates in case of unordered delivery by RTI
- Each Federate has specific code to access the CFS Libraries and Simulation Manager
  - The most intensive software module is the interface between the Federate World View Libraries and the specific mechanism/function calls for processing the attributes

# Lessons Learned to Date

## Technical

- Performing simulation level triggers requires creating ~Simulation class in FOM since Federate to Federate communication is not supported
- Federate level specification of Publication & Subscription does not exist in FOM
- Only receiving changed attributes necessitates using a guaranteed ordering Time Management scheme unlike DIS since states are repeated

# Lessons Learned to Date (Cont.)

- General
  - Simulations developed using Data Abstraction and Encapsulation can more easily be modified to support Attribute level ownership
  - Real-time simulations that use Operating System calls, such as `gettimeofday()`, for calculating delta time can easily be modified to support non-realtime time management by redefining the system call with appropriate logic

# Summary

- **We have a good start and are on time and on budget**
- **We will have a Simulation Manager and some middleware (FCS) by 4/1/96**
- **We are Evaluating Adding JMASS to Federation**